WHAT IS CLAIMED IS:

1. A resonant-cavity light-emitting diode comprising:

a substrate having a first main surface and a second main surface which are substantially parallel to each other,

a first semiconductor distributed Bragg reflector mirror layer formed on said first main surface of said substrate,

a semiconductor light-emitting layer formed over said first semiconductor distributed Bragg reflector mirror layer,

a second semiconductor distributed Bragg reflector mirror layer formed over said semiconductor light-emitting layer,

a light extraction section which is formed on said second semiconductor distributed Bragg reflector mirror layer and has an opening to extract light from said semiconductor light-emitting layer,

a first electrode formed around said opening of said light extraction section on said second semiconductor distributed Bragg reflector mirror layer,

a second electrode formed on said second main surface of said substrate, said second electrode being configured to form a current path leading to said first electrode through said first semiconductor distributed Bragg reflector mirror layer, said semiconductor light-

emitting layer and said second semiconductor distributed Bragg reflector mirror layer, and

a reflector portion provided on an inner wall of a groove, said groove being formed by removing portions of said first semiconductor distributed Bragg reflector mirror layer, said semiconductor light-emitting layer and said second semiconductor distributed Bragg reflector mirror layer which lie in a peripheral portion of said first electrode and formed to penetrate through each of said semiconductor light-emitting layer and said second semiconductor distributed Bragg reflector mirror layer and reach said first semiconductor distributed Bragg reflector mirror layer, said reflector portion being formed to reflect part of light emitted from said semiconductor light-emitting layer into said groove.

2. The resonant-cavity light-emitting diode according to claim 1, wherein said reflector portion is configured with a concave surface with respect to light from said semiconductor light-emitting layer.

3. The resonant-cavity light-emitting diode according to claim 2, wherein said groove has substantially a U-shaped cross section.

4. The resonant-cavity light-emitting diode according to claim 1, wherein said groove is formed in substantially a ring form in a peripheral portion of said first electrode.

5. The resonant-cavity light-emitting diode according to claim 1, wherein said reflector portion comprises a reflection film which is formed on said inner wall of said groove and reflects light from said semiconductor light-emitting layer.

6. The resonant-cavity light-emitting diode according to claim 1, wherein said semiconductor light-emitting layer includes an active layer using an $In_{1-x}(Ga_{1-y}Al_y)_xP$-series material ($0 \leqq x, y \leqq 1$) and a light emission wavelength thereof is 620 to 690 nm.

7. A resonant-cavity light-emitting diode comprising:

a substrate having a first main surface and a second main surface which are substantially parallel to each other,

a first semiconductor distributed Bragg reflector mirror layer formed on said first main surface of said substrate,

a semiconductor light-emitting layer formed over said first semiconductor distributed Bragg reflector mirror layer,

a second semiconductor distributed Bragg reflector mirror layer formed over said semiconductor light-emitting layer,

a light extraction section which is formed on said second semiconductor distributed Bragg reflector mirror

layer and has an opening to extract light from said semiconductor light-emitting layer,

a first electrode formed around said opening of said light extraction section on said second semiconductor distributed Bragg reflector mirror layer,

a second electrode formed on said second main surface of said substrate, said second electrode being configure to form a current path leading to said first electrode through said first semiconductor distributed Bragg reflector mirror layer, said semiconductor light-emitting layer and said second semiconductor distributed Bragg reflector mirror layer,

a reflector portion provided on an inner wall of a groove, said groove being formed by removing portions of said first semiconductor distributed Bragg reflector mirror layer, said semiconductor light-emitting layer and said second semiconductor distributed Bragg reflector mirror layer which lie in a peripheral portion of said first electrode and formed to penetrate through each of said semiconductor light-emitting layer and said second semiconductor distributed Bragg reflector mirror layer and reach said first semiconductor distributed Bragg reflector mirror layer, said reflector portion of said groove being formed to reflect part of light emitted from said semiconductor light-emitting layer into said groove, and

a high-resistance region which is formed to reach

said inner wall of said groove and formed by making portions of said first semiconductor distributed Bragg reflector mirror layer and said second semiconductor distributed Bragg reflector mirror layer other than at least portions thereof which lie just below said opening of said light extraction section electrically highly resistive.

8. The resonant-cavity light-emitting diode according to claim 7, wherein each of said first semiconductor distributed Bragg reflector mirror layer and said second semiconductor distributed Bragg reflector mirror layer includes a semiconductor layer with a high Al composition ratio and said high-resistance region is formed by selectively oxidized part of said semiconductor layer in a lateral direction from said groove.

9. The resonant-cavity light-emitting diode according to claim 7, wherein said reflector portion is configured with a concave surface with respect to light from said semiconductor light-emitting layer.

10. The resonant-cavity light-emitting diode according to claim 9, wherein said groove has substantially a U-shaped cross section.

11. The resonant-cavity light-emitting diode according to claim 7, wherein said groove is formed in substantially a ring form in a peripheral portion of said first electrode.

12. The resonant-cavity light-emitting diode according to claim 7, wherein said reflector portion comprises a reflection film which is formed on said inner wall of said groove and reflects light from said semiconductor light-emitting layer.

13. The resonant-cavity light-emitting diode according to claim 7, wherein said semiconductor light-emitting layer includes an active layer using an $In_{1-x}(Ga_{1-y}Al_y)_xP$-series material ($0 \leqq x, y \leqq 1$) and a light emission wavelength thereof is 620 to 690 nm.

14. An optical transmission module comprising:

a resonant-cavity light-emitting diode, said resonant-cavity light-emitting diode including:

a substrate having a first main surface and a second main surface which are substantially parallel to each other,

a first semiconductor distributed Bragg reflector mirror layer formed on said first main surface of said substrate,

a semiconductor light-emitting layer formed over said first semiconductor distributed Bragg reflector mirror layer,

a second semiconductor distributed Bragg reflector mirror layer formed over said semiconductor light-emitting layer,

a light extraction section which is formed on said

second semiconductor distributed Bragg reflector mirror layer and has an opening to extract light from said semiconductor light-emitting layer,

a first electrode formed around said light extraction section on said second semiconductor distributed Bragg reflector mirror layer,

a second electrode formed on said second main surface of said substrate, and

a reflector portion provided on an inner wall of a groove, said groove being formed by removing portions of said first semiconductor distributed Bragg reflector mirror layer, said semiconductor light-emitting layer and said second semiconductor distributed Bragg reflector mirror layer which lie in a peripheral portion of said first electrode and formed to penetrate through each of said semiconductor light-emitting layer and said second semiconductor distributed Bragg reflector mirror layer and reach said first semiconductor distributed Bragg reflector mirror layer, said reflector portion being formed to reflect part of light emitted from said semiconductor light-emitting layer into said groove; and

an optical fiber on which light from said light extraction section and said groove of said resonant-cavity light-emitting diode is incident.

15. The optical transmission module according to claim 14, wherein said groove of said resonant-cavity

light-emitting diode is configured in substantially a ring form and a diameter of a light-receiving end surface of said optical fiber is larger than that of said ring of said ring-form groove.

16. The optical transmission module according to claim 14, wherein said reflector portion of said groove of said resonant-cavity light-emitting diode is configured with a concave surface with respect to light from said semiconductor light-emitting layer.

17. The optical transmission module according to claim 14, wherein said reflector portion includes a reflection film which is formed on an inner wall portion of said groove and reflects light from said semiconductor light-emitting layer.

18. The optical transmission module according to claim 14, wherein said semiconductor light-emitting layer of said resonant-cavity light-emitting diode includes an active layer using an $In_{1-x}(Ga_{1-y}Al_y)_xP$-series material ($0 \leqq x, y \leqq 1$) and a light emission wavelength thereof is 620 to 690 nm.

19. The optical transmission module according to claim 14, further comprising a high-resistance region which is formed to reach said inner wall of said groove and formed by making portions of said first semiconductor distributed Bragg reflector mirror layer and said second semiconductor distributed Bragg reflector mirror layer of said resonant-cavity

light-emitting diode other than at least portions thereof which lie just below said opening of said light extraction section electrically highly resistive.

20. The optical transmission module according to claim 19, wherein each of said first semiconductor distributed Bragg reflector mirror layer and said second semiconductor distributed Bragg reflector mirror layer of said resonant-cavity light-emitting diode includes a semiconductor layer with a high Al composition ratio and said high-resistance region is formed by selectively oxidized part of said semiconductor layer in a lateral direction from said groove.